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United States Patent [19]

Patel et al.

[11] **Patent Number:** 5,517,202[45] **Date of Patent:** May 14, 1996[54] **MINIMAL WASHOVER, INLINE HIGH FREQUENCY BUOYANT ANTENNA**[75] Inventors: **Jayant S. Patel**, Waterford; **Rolf G. Kasper**, Old Lyme; **Craig A. Wagner**, Norwich; **Anthony J. Kalinowski**, East Lyme, all of Conn.[73] Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, D.C.[21] Appl. No.: **366,933**[22] Filed: **Dec. 30, 1994**[51] Int. Cl.⁶ **H01Q 1/34**[52] U.S. Cl. **343/709; 340/984; 441/11**[58] **Field of Search** 343/709, 710; 367/3, 4; 441/30, 11, 33; 340/984, 985, 870.1; 114/242, 312, 313; H01Q 1/34[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Donald T. Hajec*Assistant Examiner*—Tan Ho*Attorney, Agent, or Firm*—Michael J. McGowan; Prithvi C. Lal; Michael F. Oglo[57] **ABSTRACT**

A buoyant antenna for providing sufficient transmission time windows for communication at ultra-high and extremely-high frequencies. The antenna is configured to float on the surface of a body of water and is connected to a vessel through a communications cable. The buoyant antenna has a length and a stable or rotation resistant cross-section which minimizes wash over when deployed in a manner which essentially eliminates in line tension on the antenna. The antenna is cylindrically shaped with sensor elements offset from the centerline. A high density mass is placed diametrically opposite the sensor elements and a high buoyancy foam fills out the remaining cylindrical shape. The high density mass creates a righting moment to maintain the sensor elements above the water line. The absence of in line tension during communication periods serves also to eliminate any detectable wake during those communication periods. The lack of detectability makes the antenna and its deployment method particularly well suited for use when the vessel is a submarine.

12 Claims, 2 Drawing Sheets